~PTO's

-CIP / U.S.PATENT APPLICATION DOCUMENT-

ATTN: Mr. Robert M. Fetsuga, Primary-Pat.Examiner / GAU- #3751

C/O: Commissioner of Patents, U.S.Patent Office, Washington D.C. 20231 USA

APPLICANT: Eugenio L. Pangramuyen, -(Sole-applicant/unassigned); PHONE: 619 / 299-0066

→ POSTAL: 4042 East Plaza Boulevard, NationalCity, California 91950

INVENTION ENTITLED: " UNIVERSAL PNEUMATIC-SNAKE APPARATUS & METHOD "

FIRM ASSISTING DOCUMENTATION & APPLICANT'S DOCKET REF.NR.: Inventech, VH/100103

PRIOR APPLICANT PTO/DISCLOSURES: Document Serial-nr.: #483,987 (filed: 14/Dec./2000) then the parent Utility/Pat.Application #09/922,554 (filed: 06/Aug./2001) which was inadvertently caused to become aabandoned by the PTO's having lost Applicant's timely paid CIP-Response, --therefore herewith being resubmitted for allocation of a new CIP/Serial-number and subsequent Examination procedure. [FILING-FEE PRE-PAID].

TENTATIVE U.S.CLASS: Utility; for Examiner's determination. NUMBER OF DRAWINGS: one

NUMBER OF PATENT CLAIMS: Independent-3; Dependent-17, Multipul-dep.- 0

ATTACHED ITEMS: Oath & Declaration Petition w/small-entity & Status-pledge statements.

RELATED-ART IDS(Info.Disclosure Statement) CITED BY APPLICANT:

See accompanying IDS-forms & attached Patent-copies, in compliance with PTO/#IC-10 regarding known related-art material; for Examiner's review.

- S P E C I F I C A T I O N -

I.) BACKGROUND OF THE INVENTION:

FIELD OF INVENTION:

This invention relates to plumbing-snake like apparatus employed to clear clogged plumbing-line drains, and more specifically it relates to those types of snake like devices introducing air only (not water) as a clog/obstruction clearing medium.

RELEVANT PRIOR-ART:

Background research discovery provides some prior patent-art regarded as germane to this disclosure, chronologically for example U.S.Pat.#1,498,446(filed: 2/1924) teaches a sewer-line cleaner apparatus which was essentially incapable of turning an internal pipeline corner, but employed a plurality of water-nozzles serving to irrigate the pipeline wall as a cutting-disk is advanced forward through the problematical pipeline; however, there is no contemplation of using air as a fluid blasting medium.

In U.S.Pat.#1,510,212(filed: 11/1922) is shown a special concentric-dublet/airhose-snaking device involving a three-stage operation for opening remotely stopped-up drainpipes; whereof the special hose is first shoved through the pipe as far as the obstruction will permit, then secondly an air-pump is activated causing a bladder-collar to inflate and impinge against the internal-wall of the pipe, at which third-stage the air-pressure proceedes to generate pneumatic-pressure against the problematical stoppage to force it clear without having introduced exaserbating water into the drain-pipe. However, because of the relatively cumbersome leading-end (being of doublet construction), the device is unfortunately not able to fish around the tight-bends encountered in toilets for example.

In U.S.Pat.#1,803,425(filed: 1/1930) is shown an elongated rigid (unable to turn corners) water-nozzle having a forwardly pointed or tapered-head portion having a core-bore therein narrowing into an outlet at its nose, plus a plurality of obliquely angled outlets are also arranged in fluid-communication with the relatively large core-bore; and, no contemplation of employing air as a blasting medium.

In U.S.Pat.#1,937,172(filed: 4/1933) is shown a soil-irrigating implement comprised of a waterhose leading from an ordinary water-faucet and connected to a vertically hand-held rigid-pipe portion which has a wedge-shaped nozzle at its lower terminus, and a concentric anti-splash/cup member which impinges against the ground while the nozzel-pipe apparatus is manually forced down into the soil.

In U.S.Pat.#2,062,850(filed: 8/1933) is shown a water-powered sewer rotary-cutter

with a plurality of radially arranged water-nozzles, which is a rigid structure unable to navigate turns within the pipeline; and, no contemplation of employing air blasting of obstructions within the pipeline.

In U.S.Pat.#2,568,347(filed: 9/1946) is shown a plumbing-line obstruction clearing apparatus employing a flexible water-hose to which is affixed a bullet-tip nose member, and a slightly aftward plurality of peripherally radiating water-outlets squirting obliquely forward thereto, plus an optional cork-screw like tip which can be attached in place of the bullet-tip; -the elongated configuration not appearing to be navigateable around tight turns within the pipe-line, nor is there any contemplation of employing other than water-pressure.

In U.S.Pat.#2,608,421(filed: 12/1947) is shown a flexile-spring like rotary-auger which is attached to a flexible water-hose for manual snaking into a plumbing-line drainpipe, for simultaneously directing a forwardly outleting jet of water; -the apparatus appearing to be able to navigate turns within the pipeline; yet, there is no contemplation of employing air as an augmenting blasting medium.

In U.S.Pat.#2,673,986(filed: 6/1949) is shown a drain-clearing device comprising an airhose having a sprayhead (38) fitted with plural obliquely oriented orifices (44) in combination with a circumferential drain sealing-disk (46) which enables air-pump air-pressure fed in via the airhose to impose pneumatic-pressure against the drain-blockage (not shown) as to thereby blow the obstruction free from within the drain-pipe. It is said that the function of the special sprayhead is to be raised very slowly while air is flowing from the orifices (44), as to thereby loosen and blow pipeline sludge downward (forward).

In U.S.Pat.#2,753,876(filed: 3/1955) is shown a plumbing-line drain-valve flushing device in the form of a longitudinally elongated self-inflating rubber-bladder of convoluted cross-section, which expands to create a barrier and thereby force the clogging obstruction down the drain-pipe by force of hydraulic-pressure; thus no of thought employing air is contemplated.

In U.S.Pat.#2,797,423(filed: 9/1954) is shown a conventional flexible garden water-

hose to which is screw-threaded a special cap like water-nozzle having an abbreviated auger like nose device, which is intended to snag and dislodge via water-blasting any obstruction residing with the drain-line; again, no contemplation is given to the use of air therein.

In U.S.Pat.#2,976,191(filed: 1/1959) is shown a device for killing outside roots growing into a sewer-line, comprising a flexible fluid(water or air)-line which is in fluid-communication with an inflatable-bladder snakingly arranged some distance down the problematical drain-pipe; yet, the option of air is not contemplated to be utilized for anything other than the mild releasing of a chemical (such as copper-sulphate), in as much as the apparatus is not capable of physically (nor pneumatically) dislodging drain-pipe obstructions.

In U.S.Pat.#3,195,548(field: 1/1964) is shown a sewer-pipeline opener apparatus comprised of a length of flexible water-hose to the leading-end of which is affixed a tightly coiled longitudinal spring like tube passing through a plurality of spaced apart spherical members of approximately the same diameter as the hose portion cross-section; and including an outlet at the leading-end of the spring-tube for expelling a jet of water to dislodge the drain-pipe obstruction.

In U.S.Pat.#3,616,479(filed: 7/1970) is shown a longitudinally elongate rigid tubular member which aftward-end is affixed to a garden water-hose, the forward-end being formed into a flattened-oval shape and fitted with a chisel like tip portion having water-outlets at both lateral-sides where a dual/jet-stream of water is projected forward of the pointed chisel-nose portion.

In U.S.Pat.#3,937,404(filed: 6/1975) is shown a longitudinally elongate ball like probing water-nozzle fitted to the leading-end of a flexible garden water-hose connected to a water-faucet, forcing pressurized-water to stream out of a plurality of fan-shaped slots formed in the outer periphery of the water-nozzle; thereby well navigating turns encountered with the drain-pipe, but when a drain-stopper is brought intimately to the mouth-access of the drain-pipe, and the clogging obstruction is forced down the drain-

pipe via hydraulic-pressure and hydro-blasting of the obstruction. However, being the system employs water, a back-flow will occur causing a typically stopped-up sink to thus overflow, -making a problematical wet-mess of things, as well as incurring potential water damage to the floor area (and any ceiling thereunder)!

In U.S.Pat.#3,959,840(filed: 2/1975) is shown a drain-pipe clean-out hydro-snake apparatus which operates substantially like a motorized-feed plumber's snake except that a flexible water-hose is included within the longitudinal core of the lengthy coiled-metal member, which is forwardly terminated with a water-jet nozzel; albeit not contemplating operation via air-blasting.

In U.S.Pat.#4,257,139(filed: 4/1979) is shown a flexible rubber water-hose which is connected to a water-faucet at its trailing-end, while the forwardmost-end is terminated with substantially hemispherical shaped water-nozzle having a plurality of obliquely forward and one longitudinally forward directed outlets, the single forward outlet being arranged concentric to an augar-like coiled-metal mechanical impingement device for use in cooperation with the water-stream action; thus, not contemplating operation via pneumatic fluid medium.

In U.S.Pat.#5,497,514(filed: 4/1995) is shown a drain cleaning device comprised of a water-hose connected to a water-faucet at its afterward end, while the forward-end of the water-hose includes a special spray-nozzle having plural orifices (24) in combination with plural flexile finger elements (26) which are said to essentially center the nozzle within the problematical drain-pipe. Because there is no provision for building-up hydraulic-pressure within the drain-pipe, it is believed the primary function of this apparatus is to periodically service a drain-pipe so as to keep it relatively clean internally, --and thereby possibly obviate a potential stoppage problem.

Finally, in U.S.Pat.#5,927,957(filed: 6/1997) is shown a special hand-portable pneumatic/plunger-pump apparatus (10) in combination with a forward hose member (40) having a forward terminus fitted with a single-orifice outlet-nozzle (42), the special manual/air-pump being constructed with a plunger-rod having a piston at its forward

terminus (and including suitable internal one-way flap-valves); --whereby vigorous hand-pumping action of the piston-rod is said to force pulses of air upon the drain-pipe obstruction, without introducing additional water into the drain area.

Therefore, in full consideration of the preceding patent review, there is determined a need for an improved form of device to which these patents have been largely addressed. The instant inventor hereof believes their newly improved fluid type plumber's-snake device, commercially referred to as the PwrClogbuster™, currently being developed for production under auspices of the SaniSnake-Mfg./Mkt.Co., exhibits certain advantages as shall be revealed in the subsequent portion of this instant disclosure.

II.) SUMMARY OF THE INVENTION:

A.) In view of the foregoing discussion about the earlier invention art, it is therefore important to make it pellucid to others interested in the art that the primary object of this invention is to provide an improved type of Professional-plumber quality fluid-assisted drain-pipeline unclogging apparatus and method of deployment which is based solely upon the administering of pressurized-air as the vital fluid-medium, contrary to the heretofore exclusively relied upon fluid-medium of pressurized-water. The notion of employing pneumatics instead of hydraulics, especially resides in its great critical advantage of not introducing further water to free a clogged drain-pipe, owing that the introduction of water can adversely exacerbate an already problematically water-soaked situation. Advantageously, on-going injection of pressurized-air merely back-flows up into the ambient-air proximal the drain-pipe entry point; -while by way of comparison, the on-going injection of any additional water can only back-flow into the clogged-sink or toilet, which invariably adds still more of a dirty-water mess (before the stubborn drain clog finally gives away). Accordingly, my improved pneumatic/plumber's-snake apparatus is even superior to a conventional purely mechanical auger-spring type plumber's-snake, owing that my invention can actually fragment the problematical clog via manually controlled blasts of resonating-air, along with optional application of pneumatic-pressure

(by blocking-off drain entry aperture) as well if so desired.

B.) Another object of this invention disclosure is to set forth a pneumatic/plumber's-snake article according to item-A, wherein the nozzle portion is preferably made of a relatively rigid material such as metal (brass generally) or high-impact molded-plastic, and is preferably compactly configured as a hemispherically shaped head which preferably includes a radially-barbed male-connector portion for connection into the leading terminus of the tubing. This design is preferred for its ability to probe and navigate passed the various declinations (irregularities), turns, and crags presented within the plumbing-line passageway of a typical drain-pipe ultimately leading to a main sewer-pipe or a holding-tank (such as a septic-tank for a building or holding-tank aboard a marine-vessel or motorhome).

The air-nozzle can be provided with variously configured air-outlets, some of which are quite similar to the prior-art of water-nozzel design already in the public-domain, and yet still other iterations which are of a proprietary nature. For example, I prefer that most of my air-nozzel embodiments include a longitudinal primary central outlet which can be an orifice drilled in the rounded leading terminus of the air-nozzle; however, my preferred embodiment of this basic nozzle iteration features an abbreviated snout of longitudinally protruding configuration, capable of inducing a unique abaxial drawing forward of preipheral water, which thereby enhances the turbulent blasting action of the basic air-stream jet. The exiting-orifice portion is approximately 3/32-inch in internal-diameter, which aftwardly transcends into an approximate 1/8-inch internal-diameter passageway extending aftwardly into the air-hose portion.

Another air-nozzle configuration set forth herein is also preferably of the substantially hemispherical-head type of forward projection shape, having a plurality of obliquely forwardly arranged cooperative secondary outlets eminating from the common central 1/8-inch air-passageway, which serves to emit an enhanced forwardly projecting cone of turbulent air. However, a more proprietary version employs the primary central longitudinal outlet, plus at least one or several obliquely trailing cooperative secondary

inlets converging into the central outlet as a common air-passageway to the longitudinal outlet. -This special air-nozzel thereby serving to suck-in ambient water, the resulting air and water combination thereby enhancing the resulting generation of desirably turbulent clog blasting fluid (air & water exiting together); -yet critically, without introducing additional water into the plumbing-line drain-pipe.

The air-hose is an imperforate flexible resilient conventional rubber tubing or other commercially available type of air-hose tubing preferably employing cording-reinforcement capable of reliably handling 80-120psi, and preferably having a mini/max inside-diameter of 1/4-inch to 1/2-inch. This air-hose tubing can be of most any suitable length (ideally, a relatively short length of say about 12-feet, which can be optionally coupled to an increased length of air-hose tubing as required for more remotely situated drain clogs), while the aftward or trailing-end of the tubing is provided with a conventional coupling, preferably such as a standard air-hose male/female type mechanical positive quick-disconnect (although a barbed type of male-connector of the type which is merely manually pressed into the resilient rubber tubing will generally suffice).

C.) Another object of this invention disclosure is to set forth a pneumatic/plumber's-snake article according to items-A&B, wherein the flexible tubing air-hose includes a slip-fitting annular splash-deflector device having a central through-hole bore acting as a slide-glide portion and through which the air-hose is manually fed proximal the drain-pipe entry aperture, the particular radially outermost forward projecting annular flange portion thereof thus describing a cup-shape (substantially like an encircling trough) effectively serving to divert the plumbing-line reverse-flowing air activated water turbulence as to be directed substantially away from otherwise undesirably back-splashing toward the immediate presence of its human operator.

D.) Another object of this invention disclosure is to set forth a pneumatic/plumber's-snake article according to items-A,B,&C, wherein the air-hose portion is preferably connected in fluid-communication with a conventional commercially available intermediate air-valve device preferably having both a fully-closable and a fully-

openable mode of operation. The air-valve inlet-port is thus necessarily connected aftwardly to a source of air-pressure, such can be provided by a simple light-weight hand-portable air-tank unit, -or the air-pressure source can be an existing air-line (such as generally found in a workshop or aboard a military marine-vessel for example), or via a conventional hand-portable gasoline or electric powered air-compressor (such as a piston-type or diaphragm-type) often combination with an air-reservoir unit (so as to provide a greater steady head of pressure). Use of my pneumatic-snake invention in conjunction with most any manually operated air-pump unit, is not considered to be a practical alternative, owing that to achieve a decent head of air-pressure while manipulating the pneumatic-snake into the stopped-up drain-pipe is simply more effort than one person can effectively manage.

In actual operation, the air-hose is simply fed down into the drain-pipe which may for example be part of an ordinary sink (basin), bathtub, or commode (toilet), -with some degree of learned dexterity, owing that a novice user may think they have encountered the resistance presented by the problematical drain obstruction, when perhaps it is only that the advancing water-nozzle is merely in the midst of navigating a right-angle turn within the drain-pipe, and will soon pass to impinge upon the actual obstruction a short distance further down the drain-pipe.

Once the obstruction is believed to be reached, it is suggested that the human operator then commence to employ a sequentially intermittent operation in preferred direct bursts of approximately 2-4 seconds open-valve time duration, followed by a closed-valve pause of another approximately 2-4 seconds duration time before resuming open-valve pulsed operation; -to be conducted repetitiously until the obstruction becomes cleared (as will be observed by a sudden drop in water-level within the sink surrounding the addressed drain-outlet).

The prime object of my invention is to therefore provide a more effective and efficient tool and method for unclogging a blockage within drain-pipes of all the various types found in domestic, institutional, and mobile (such as marine and motorhome)

plumbing systems. For example, the disclosed invention is quite adaptable and convenient aboard even the largest of sea-going vessels, owing to the ready availability of 80-120psi air-pressure service-outlets; and my preferably rubber based air-hose pneumatic-snake body is virtually immune to the adverse effects of saltwater environment, which corrosiveness is a constant enemy to the traditional coiled plated-steel plumber's-snake. Moreover, the more resonate effect (being a compressive fluid medium) of pressurized-air actually exerts a more fragmenting blast effect, which more readily cuts through and loosens most of the usual foul and tenacious materials which are found to be the major cause of problematical blockages in drain-pipes.

Furthermore, it has been found that the exceptional flexibility of my simple pneumatic-snake apparatus, functions to be much more easily forced into the drain-pipe and around the various S-bends, U-bends, and L-bends, which often pose a difficult task to the manipulator of a conventional coiled-wire & wire-core snake, or steel-tape snake, that can barely probe around some simple 90-degree elbow type L-bends commonly found on an enclosed vacuum-type sewer-drain pipe utilized on most modern marine ships. Hence, the pneumatic-snake of my invention actually demands less operating skill, yet is more easily deployed, and is easily cleaned-up after usage-- simply by purging the interior of the withdrawn hose & nozzle with air-pressure, and rinsing-off its exterior.

III.) DESCRIPTION OF THE PREFERRED EMBODIMENT DRAWINGS:

The foregoing and still other objects of this invention will become fully apparent, along with various advantages and features of novelty residing in the present embodiments, from study of the following description of the variant generic species embodiments and study of the ensuing description of these embodiments. Wherein indicia of reference are shown to match related matter stated in the text, as well as the Claims section annexed hereto; and accordingly, a better understanding of the invention and the variant uses is intended, by reference to the drawings, which are considered as primarily exemplary and not to be therefore construed as restrictive in nature; wherein:

Figure-1, is a semi-diagrammatic side/elevation-view of the "prior-art" hydraulic-snake apparatus and system, serving to demonstrate the problems inherent in the use of water as the jet-thrust blasting medium; thereby exacerbating the water-flooding situation;

Figure-2, is a semi-diagrammatic side/elevation-view of my pneumatic-snake apparatus and system, including cutaway three portions serving to comparatively demonstrate the inherent benefits of my waterless jet-thrust blasting medium, which advantageously eliminates the heretofore potential water-flooding situation;

Figure-3, is an enlarged side/elevation-view of my basic hemihead/air-nozzle member, featuring a single central passageway for providing the air-jetstream turbulence;

Figure-4, is a side/elevation-view of my optional hemihead/air-nozzle member having a protruding nose portion, and demonstrating how a boundary-layer of water is induced to increase the turbulence of the air-jetstream;

Figure-5, is a side/elevation-view showing an alternate air-nozzle configuration thereof, employing auxiliary oblique forwardly directed air-outlets effectively producing a wider dispersion of turbulent air-jetstream;

Figure-6, is a side/elevation-view showing an optional combination air/water type of nozzle, employing aftwardly oriented water-induction inlets, which provide a water-augmentation to the primary air-driven jet-stream for additional jet-stream turbulence.

Figure-7, is a side/elevation-view showing another optionally favored embodiment

of my air-powered blaster nozzle, here employing similar aftwardly oriented ambient-water induction inlets having an abrupt annular transitional-step feature which provides super/water-augmentation to the primary air-powdered jet-stream turbulence generated by my apparatus.

IV.) ITEMIZED NOMENCLATURE REFERENCES:

10,10'/10"- existing exemplified drain J-pipe, lodged clog / expelled fragment

11,11'- normal odor-vapor water-trap level, ambient water

12,12',12"- backed-up basin water-level, existing basin, drain-aperture

13,13'- prior-art: remote water-faucet

14,14'- prior-art: water-hose, female/hose-connector

15,15'- prior-art: water-nozzle, water-jet action

16,16',16"- prior-art:

annular hydraulic-stopper, back-flowing hose-water, back-flowing poluted-water

17,17',17"- perimeter-flange, sliding-sleeve, deflected-air splash-back action(ref.-arrow)

18,18',18",18p- air-hose, sleeving, reinforcement-cording, air-line passageway

19,19',19"- general nozzle, hemispherical-head, circular-extension portion

20,20',20"- protrusional-nose, no-snag junction, boundary-layer water-flow ref.-arrows

21,21',21",21S- delivery-passageway, transitional-taper, exiting-orifice, transitional-step

22,22',22"- oblique peripheral air-outlet, air outlet-tunnel, air-flow action ref.-arrows

23,23',23"- oblique peripheral water-inlet, inlet-tunnels, admixture-ports

24/24',24"- air-control valve: closed./ open, cyclic off/on/off/on-action

25,25',25"- male-connector nipple, plural retention-barbs, enlarged stator-annulus

26,26',26"- R/air-reservoir or P/air-pump representation, pressurized-air, expended-air

27,27',27"- primary air-blast, auxiliary air-blast, combined air/water turbulent-blast

28,28',28"- diverted air-path, anti-splash air-path, blast-through air-path

29- metal ferrel

30- longitudinal-axis

31- water-flow action ref.-arrows

V.) DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS:

Initial reference comparison is given by way of Fig.-1, wherein is exhibited the most relevant known example of the remotely related prior-art (U.S.Pat.#3,937,404), wherein is employed a water-faucet 13 (generally controlling 60-100psi line-pressure) to which a standard water-hose 14 is attached via a female/screw-threaded connector 14'. The leading end of hose 14 is fitted with a specialized obstruction blasting water-nozzle 15 possibly having plural outletting water-jets 15' serving to dislodge the exemplified lodged-clog clump of debris 10' from the conventional exemplified J-trap drain-pipe 10 normally maintaining a water odor-barrier therein at level 11. Accordingly, the usual procedure with such prior-art hydraulic-snake apparatus, is to feed the special nozzle equipped water-hose down the drain-pipe 10 via a manual pushing-in action until the obstruction is met, whereupon an annular rubber-plug like hydraulic-stopper 16 is often manually pressed in place in effort to impose a backing-up of water-pressure, -whereupon water-faucet 13 is opened to blast the obstruction with the ensuing water-jet action. However, there is often another drain-pipe air-vent passageway (including typically, a stand-pipe venting to the roof of a building for example) which may be in the plumbing-drain circuit preventing full hydraulic-pressure being imposed; or, there may be an air-vent located before the J-trap (not shown here for sake of illustration clarity) arranged just below the drain-aperture 12", which when other than a partial clogging occurs, the blocked water within the drain-pipe has typically risen to a level 12 visible within the exemplified sink (or basin, bathtub, toilet-bowl for example) 12' confines. Here in Fig.-1, we see how a conventional prior-art water-powered hydraulic-snake thus unfortunately inherently acts to exacerbate the stoppage problem, by necessarily introducing more water 12 into the drain-pipe at 15' in an often failed effort to clear the obstruction; in such event, the typically murky water resultingly overflows the confines of the sink 12' to thus worsen the environmental mess.

With the general prior-art thus defined and demonstrated via Fig.-1, we now direct our attention to Fig.-2, wherein the nature of my improvement over that of the prior-art is broadly defined as a pneumatic-snake apparatus, the primary function of which is to

induce a direct fluid blasting of the drain-pipe obstruction (clog), yet without introducing exacerbating water content to the plumbing drain-pipe system. Hence, while the apparatus and method of Fig.-2 may initially appear rather similar to that of Fig.-1(prior-art), it is teaching use of a different fluid medium of air instead of water; plus there remain other subtle, however vital differences which are to become herein more evident and understood as important improvements. For example, note that a pneumatic-hose (tubing) 18 is utilized only, and shows the air-hose 18 being thus ultimately connected to a source of air-pressure 26 (which can be a hand-portable air-tank R/reservoir, or alternately an air-compressor P/pump); and the imperforate air-line (conventional air-hose tubing) 18 is arranged preferably with an intermediate preferably manually operated control-valve(V) having both open 24' and closed 24" positions of selective operation. Accordingly, when it is determined there is a clogged (or partially clogded) drain-pipe 10 condition, the invention apparatus hereof is brought into use by preferably first passing the air-hose tubing through the sliding-sleeve 17' portion of the splash-deflector so that the outer perimeter-flange portion 17' forming an annular cup like trough becomes directed toward the drain-aperture 12", and inserting one of the several different optional (generic-variants) air-nozzle embodiments (revealed in Fig's.- 3-6) into the forward terminus of the air-hose 18. This air-hose can be made of any tubing having sufficient linear-integrity as to withstand (without linearly collapsing upon itself) the manual feeding-in linear-pushing action necessarily applied proximal the drain-aperture 12". While the tubing can be just plain rubber or flexile plastic, it is preferably of the type having an internal fabric like reinforcement-cord 18" such as is depicted in Fig.-5, and an optional external sleeve 18' (such as a slippery Teflon® material) like covering as indicated in Fig.-4, which is preferably both forwardly and aftwardly finished with a conventional protective metal furrel 29 also helping to secure the air-hose tubing from blow-off expansion release from the male connector-shank 25. member.

Therefore, in Fig.-2 note that the aftward terminus (trailing end) of flexible air-hose tubing 18 can be provided with conventional male-into-female connectors for joining in

any preferred manner (such as via male into female friction fitting connection, or via unshown conventional workshop type quick-disconnect male/female-fittings) as to establish reliable fluid communication within the rudimentary air-line circuit depicted conventional air-pressure source. The forward terminus of the air-hose tubing 18 thus employs some form of an air-nozzle 19 (generally having at least one air outlet), and in Fig.-2 is shown fed into the exemplified J-pipe 10 until it has encounted physical resistance of the exemplified clog obstruction 10', at which point the user (plumber or any layman) opens air-valve (V) to position 24' (preferably in a cyclic on-off-on-off sequence of operation 24"-24'-24"-etc), whereby the high-pressure air 26' becomes thereby emitted as turbulent-air 26" from the exemplified air-nozzle 19 here shown with an optional protrusional-nose type portion 20.

Since normal water-trap level is indicated at 11, the introduction of air only can in some instances find the water substantially blown out of the J-trap 10 either by being carried off with the diverted air-path 28 and up as a backflow action and out the drain-pipe with deflected-air anti-splash action of ref.-arrow 28'; or more preferably, the air will quickly blast-through via air-path 28". However, the situations vary and there can also be a backed-up water condition such as is depicted at 12 in Fig.-1. Note here also, that it is desired that no backflow stopper 16 type of device be employed, owing that my principle does not rely upon hydraulic-pressure to expell the lodged clog 10', -only the turbulent blast effect 27. Accordingly, the turbulent blast of the high-speed air 22' advantageously never adds to the existing water level, and as exemplified expelled fragments 10" become dislodged from the drain-pipe, and any water held in the sink is commenced to flow down the drain, only then may the operator elect to optionally introduce additional water into the exemplified sink (via the sink/basin faucet for example), as to assist in finally flushing the entire clog debris 10' away into a usually substantially larger cross-section concentional sewer-pipe or holding-tank system (neither of the latter being shown here).

Study of subsequent Fig's.- 3-6 reveals further details of my air-nozzle design,

any preferred manner (such as via male into female friction fitting connection, or via unshown conventional workshop type quick-disconnect male/female-fittings) as to establish reliable fluid communication within the rudimentary air-line circuit depicted conventional air-pressure source. The forward terminus of the air-hose tubing 18 thus employs some form of an air-nozzle 19 (generally having at least one air outlet), and in Fig.-2 is shown fed into the exemplified J-pipe 10 until it has encounted physical resistance of the exemplified clog obstruction 10', at which point the user (plumber or any layman) opens air-valve (V) to position 24' (preferably in a cyclic on-off-on-off sequence of operation 24"-24'-24"-etc), whereby the high-pressure air 26' becomes thereby emitted as turbulent-air 26" from the exemplified air-nozzle 19 here shown with an optional protrusional-nose type portion 20.

Since normal water-trap level is indicated at 11, the introduction of air only can in some instances find the water substantially blown out of the J-trap 10 either by being carried off with the diverted air-path 28 and up as a backflow action and out the drain-pipe with deflected-air anti-splash action of ref.-arrow 28'; or more preferably, the air will quickly blast-through via air-path 28". However, the situations vary and there can also be a backed-up water condition such as is depicted at 12 in Fig.-1. Note here also, that it is desired that no backflow stopper 16 type of device be employed, owing that my principle does not rely upon hydraulic-pressure to expell the lodged clog 10', -only the turbulent blast effect 27. Accordingly, the turbulent blast of the high-speed air 22' advantageously never adds to the existing water level, and as exemplified expelled fragments 10" become dislodged from the drain-pipe, and any water held in the sink is commenced to flow down the drain, only then may the operator elect to optionally introduce additional water into the exemplified sink (via the sink/basin faucet for example), as to assist in finally flushing the entire clog debris 10' away into a usually substantially larger cross-section concentional sewer-pipe or holding-tank system (neither of the latter being shown here).

Study of subsequent Fig's.- 3-6 reveals further details of my air-nozzle design,

whereby the simple and effective standard coaxial outlet orifice 21' design of Fig.-3 is arranged frontally to the preferred smooth "anti-snag" hemispherical-head shape 19', and is contoured into a no-snag junction joint 20', thus blending smoothly into the external surface of the air-hose tubing 18. In the Fig.-3 embodiment, the air-nozzle simply employs a conventional smooth shank 25 coupling means which is merely pressed firmly into the tubing passageway 18p, while in Fig.-4 a conventional male shank coupling means portion having optional retention-barbs 25', whereas in Fig.-5 is shown the further alternative of a male shank (or nipple) portion provided with a single enlarged aftward-terminus 25"; -such male shank election here being essentially of engineering design choice. The overall longitudinal passageway of the air-nozzle also preferably includes an enlarged delivery-passageway portion 21 and a prefered transitional-taper region 21' leading coaxially into the primary longitudinal air-outlet orifice 21". Note then in Fig.-4 the optional additional smoothly puckered protrusional-nose portion 20, while not as snag-resistant a shape as the basic pure hemispherical-head 19' configuration of Fig.-3, serves to externally draw an enhancing boundary-layer 20" of ambient water into the air longitudinal exiting orifice 21", creating a unique external admixture blend of water and air; -thereby providing an enhancing turbulent-blasting effect 27".

The embodiment of Fig.-5 shows an air-nozzle which primary feature is the provision of secondary or auxiliary air-blast orifices 22 arranged approximately 45-degrees to the air-nozzles's central (on longitudinal-axis 25") delivery-passageway 21; which resulting air-blasts 27' (via preferably three to five obliquely arranged outlets) also preferably cooperate with the here optional longitudinal exiting-orifice 21".

Lastly, in Fig.-6 is shown a further generic-variant air-nozzle preferably having three or four perpheral water-inlets 23 in fluid communication via tunnels 23' preferably arranged obliquely (at approximately 45-degrees) within the nozzle's aftward circular-extension portion 19" while in fluid-communication with the common central delivery-passageway 21; -whereby a venturi siphon effect is automatically generated drawing ambient water into the delivery-passageway 21 via high-speed air from tubing 18p blows

passed admixture-port regions 23" to mix internally and erupt as a turbulent-blast of combined air and water 27".

Lastly, in Fig.-7 is shown a still further generic-variant air-nozzle embodiment preferebly having the previous three or four peripheral water-inlets 23 in fluid-communication via tunnels 23' preferably also arranged obliquely (at approximately 45-degrees to longitudinal axial/ref.line 30) within the nozzle's aftward circular-extension 19" portion of the hemispherical-head portion 19', -all while in fluid-communication with the common central delivery passageway 21. Accordingly, a boosted venturi siphon action effect is automatically generated by presence of an abrupt transitional-step portion 21S acting to thereby draw ambient-water into the delivery-passageway 21 via high-speed air delivered through the tubing 18P as the thus suction-induced ambient-water passes through admixture-port regions 21" as to become internally mixed with air to erupt as a violent turbulent-blast 27"; --which basic pneumic blast is heavily laden with water admixture, advantageously thereby even more powderfully impacting directly upon the exemplified clog-obstruction 10' as initially demonstrated in Fig.-2. Again, it is vital to understand that, other than that water generally already present proximal the drain obstruction 10', that absolutely no additional water is actually ever being introduced via my novel pneumatic-snake apparatus! My instant invention system therefore being uniquely capable of optionally employing the static-water "dynamically" if present; thus never exacerbating an often already near flooded working area (as do those devices/methods which introduce new/more water to the problem site). Accordingly, it is important to understand that the anti-splashback circumferential cup shaped deflector 17 only serves to substantially reduce the generally messy-splash of any usually dirty-water being highly agitated by the free escape of the induced-air 26' necessarily passing up and out of the exemplified (in Fig.-2) open entry point drain-aperture 12"; --hence, it is critical to understand that any attempt to impede/block the exhausting air 26' from freely passing out as exemplified by 28' (and possibly surrounding water 17") would be antithetic to the desired novel performance improvement of my instant invention hereof, which

uniquely functions upon the basis of hydro(optional)-pneumatic blasting-impact, not blocked pneumatic/hydraulic-pressure per'se.

Thus, it is readily understood how the preferred and generic-variant embodiments of this invention contemplate performing functions in a novel way not heretofore available nor realized. It is implicit that the utility of the foregoing adaptations of this invention are not necessarily dependent upon any prevailing invention patent; and, while the present invention has been well described hereinbefore by way of certain illustrated embodiments, it is to be expected that various changes, alterations, rearrangements, and obvious modifications may be resorted to by those skilled in the art to which it relates, without substantially departing from the implied spirit and scope of the instant invention. Therefore, the invention has been disclosed herein by way of example, and not as imposed limitation, while the appended Claims set out the scope of the invention sought, and are to be construed as broadly as the terminology therein employed permits, reckoning that the invention verily comprehends every use of which it is susceptible. Accordingly, the embodiments of the invention in which an exclusive property or proprietary privilege is claimed, are defined as follows.